

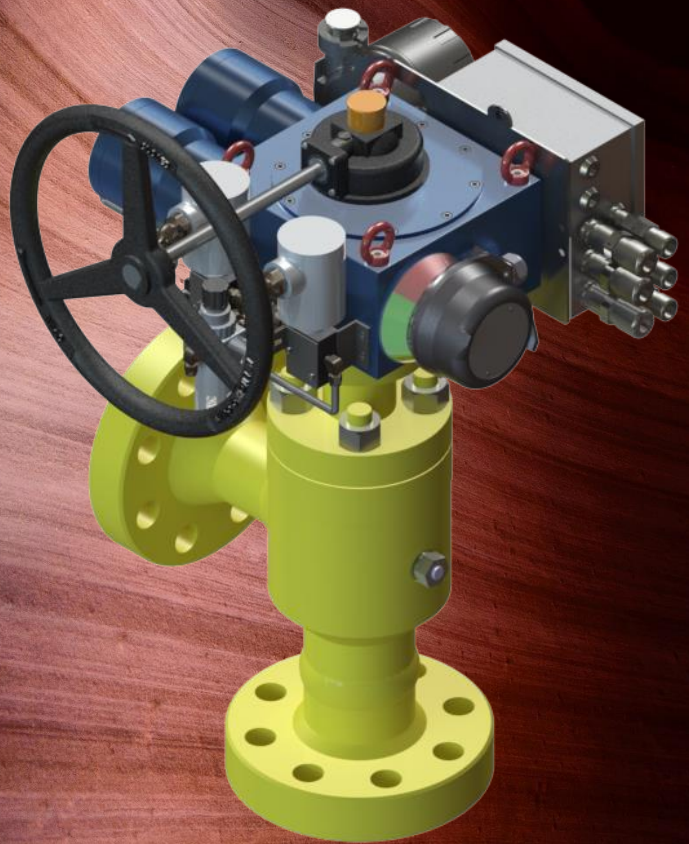
Engineering Excellence and Innovation



**ISO 9001 CERTIFIED**  
Cert No : Q-065/21

**Surface Choke Valves**



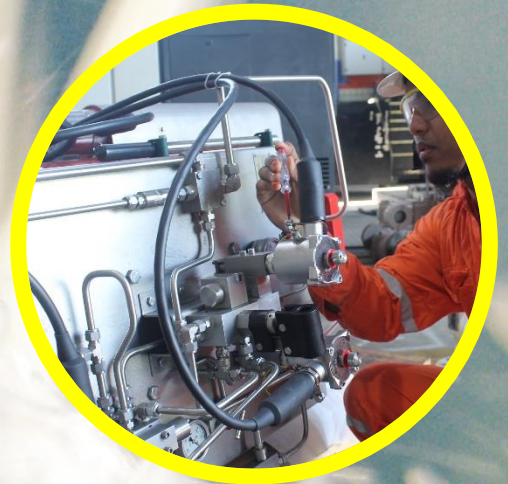




**ARIENZ Solutions believes that innovative design is the way to find solution for a perennial problem and the increasing demands of our customers**







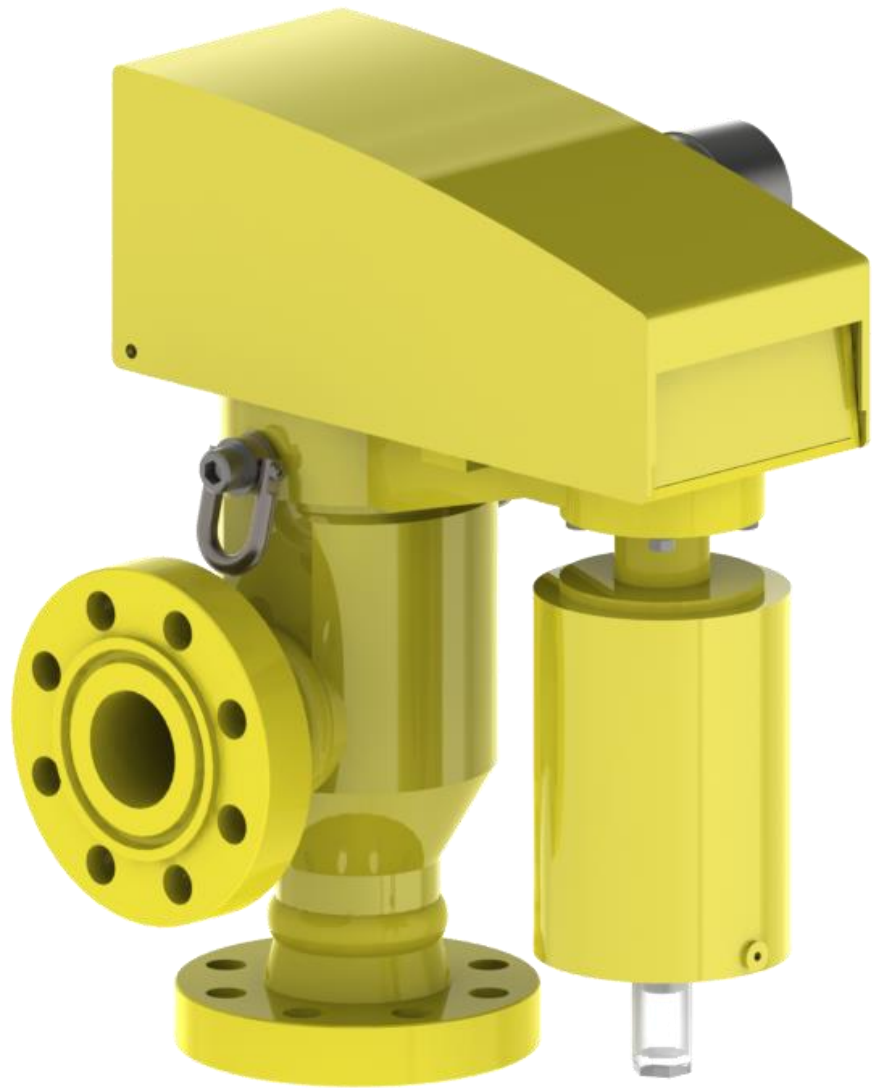
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Patented



ARIENZ Solutions Sdn Bhd was established in 2018, is a sales, manufacturing and service organization, providing a variety of standard and specialized services for the process industries in the Petroleum, Chemical, Gas, Power Generation and Process industries. As a medium size company, ARIENZ Solutions Sdn Bhd takes the advantages of a fully dedicated team of people with years of vast experience in their respected field mainly the oil, gas and petrochemical industries. We provide a depth specialized knowledge and hands-on experience in instrumentations, wellhead, pipeline and process valves. Our teams of dedicated staffs keep abreast with the latest technological developments, ensuring that we are capable of successfully compete in the global market in terms of performance quality and price. Our ambition is to continue to generate a strong growth in both local and overseas market.

ARIENZ Solutions believes that innovative design is the way to find solution for a perennial problem and the increasing demands of our customers. Maintaining a keen eye on the latest technological development and breakthrough, together with accomplished staffs and high-end engineering tools, ARIENZ are capable of delivering technology solution through innovative design to satisfy our customers' needs and budget.

We believe precision engineering is the key to delivering products of superior quality and class-leading performance. Hence, we utilize only high end and latest engineering tools, instrumentations, reliable machineries, proven testing equipment and good quality practice to achieve the task.

## Innovative Design Precision Engineering Reliable Performance

ARIENZ Solutions understands that reliable performance is an utmost important value in the harsh working condition of the oil and gas sector. Not only reliability reduces the total cost of ownership and maintenance, it is also paramount for the health and safety issues. We ensure that all products are of high reliability standard and adhere strictly to ISO 9001 and API 6A specifications.

5







Welded Body Style



Bolted Body Style



# Trim Style

External Sleeve Design is the most efficient trim design in flow handling. This trim design offers the field proven advantages of “Impingement” which contains the destructive forces of cavitation in the heavy wall tungsten carbide cage. The External Sleeve Design provides a clean, providing a clean non-destructive laminar flow, which dramatically reduces the incidence of cut out seats and body damage. The external sleeve is guided on the cage to greatly minimize stem vibration and the resulting wear. This type of trim has the following benefits and features such as Low capacity, good flow control and superior performance in erosion service.



External Sleeve

In meeting customers demand, we are not limiting our-self to just one type of trim design (External Sleeve) but also engineered another type of trim which is Internal Plug. Hence our customers can make better selection of what type of trim that suit their requirements. This design succeeds in reducing the fatigue caused by vibration, side loads caused by flow and particles impact. The objective of the trim is to dissipate and control the high energy, velocity and turbulence within the confines of the trim, thus avoiding erosion damage to the pressure containing boundaries. This type of trim also has the benefits of high capacity and good flow control.



Internal Plug

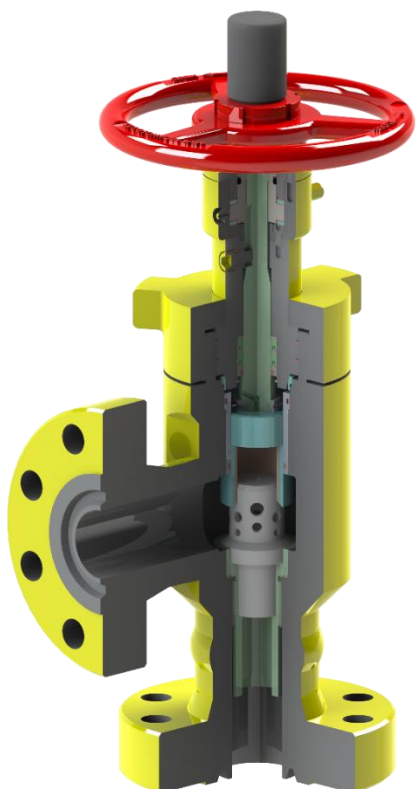
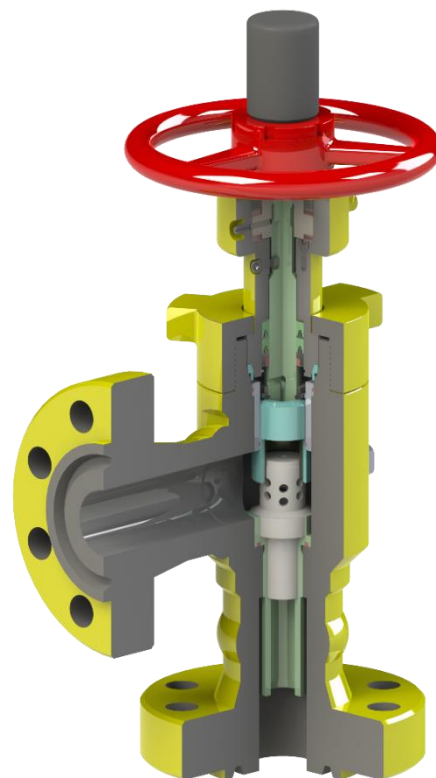




# External Sleeve Design

## AS1ES

Body Design	Right Angle
Body Size	2" Nominal (2-1/16" API)
Pressure Range (psi)	2000 – 15,000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	see "End Connection Table"
Bonnet Style	Wing Nut / Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	1 inch
Design CV	22
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



## AS1.5ES

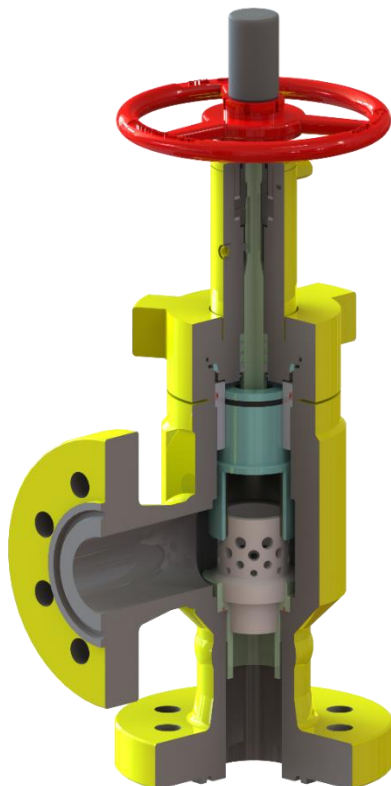
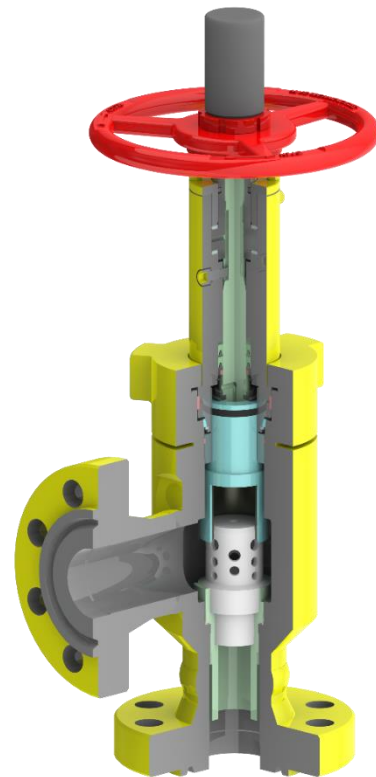
Body Design	Right Angle
Body Size	2 1/2" Nominal (2-9/16" API)
Pressure Range (psi)	2000 – 15,000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	see "End Connection Table"
Bonnet Style	Wing Nut / Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	1.5 inch
Design CV	43
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



# External Sleeve Design

## AS2ES

Body Design	Right Angle
Body Size	3" Nominal (3-1/16" API)
Pressure Range (psi)	2000 – 15,000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	see "End Connection Table"
Bonnet Style	Wing Nut / Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	2 inch
Design CV	74
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



## AS3ES

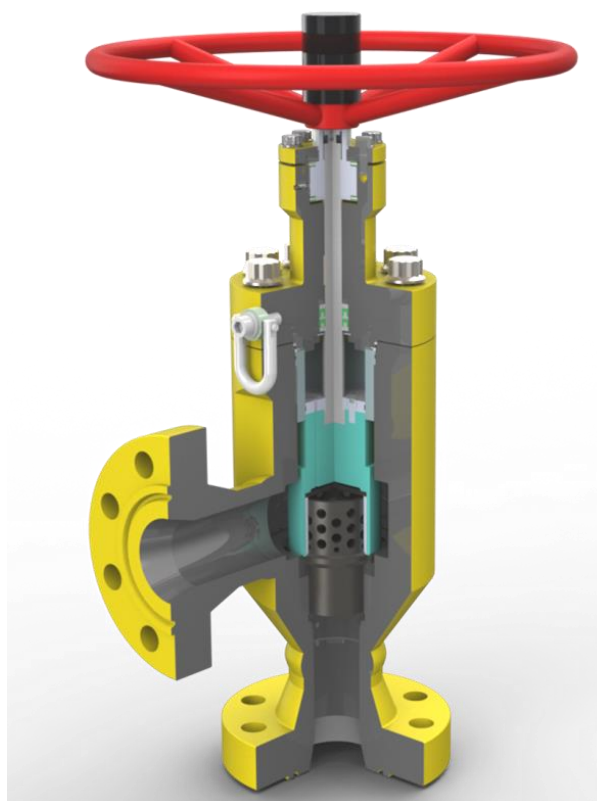
Body Design	Right Angle
Body Size	4" Nominal (4-1/16" API)
Pressure Range (psi)	2000 – 15,000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	see "End Connection Table"
Bonnet Style	Wing Nut / Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	3 inch
Design CV	154
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



# External Sleeve Design

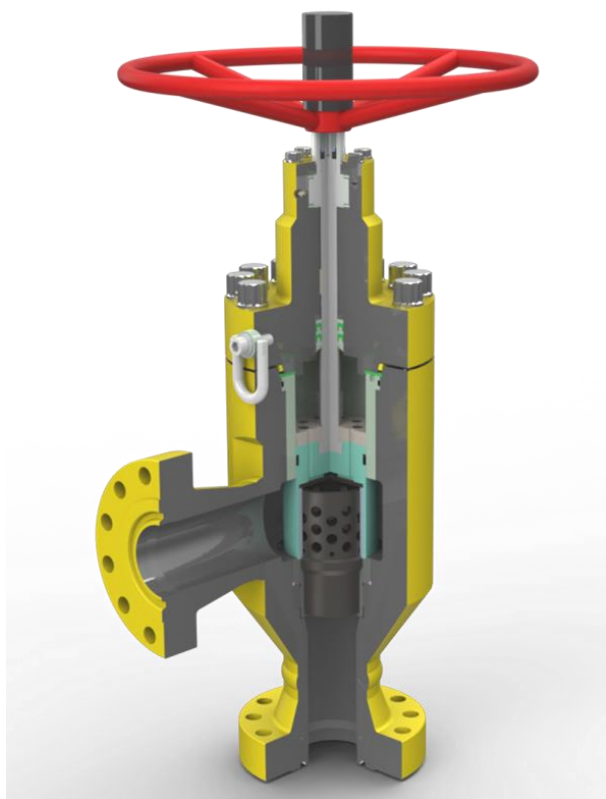
## AS4ES

Body Design	Right Angle
Body Size	4" Nominal (4-1/16" API)
Pressure Range (psi)	2000 – 10,000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	Consult Factory
Bonnet Style	Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	4 inch
Design CV	285
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



## AS5ES

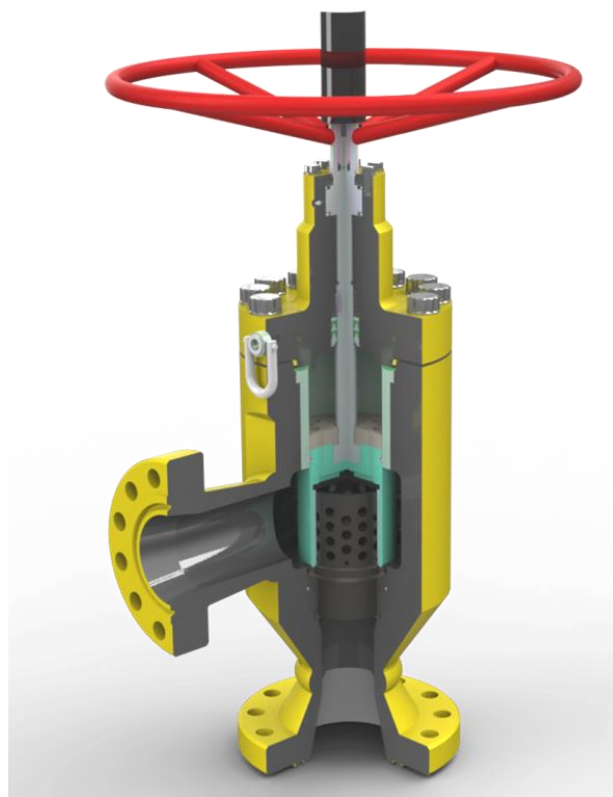
Body Design	Right Angle
Body Size	5" Nominal
Pressure Range (psi)	2000 – 6500
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	Consult Factory
Bonnet Style	Wing Nut / Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	5 inch
Design CV	470
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



# External Sleeve Design

## AS6ES

Body Design	Right Angle
Body Size	6" Nominal
Pressure Range (psi)	2000 – 5000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	Consult Factory
Bonnet Style	Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	6 inch
Design CV	650
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



## AS8&10ES

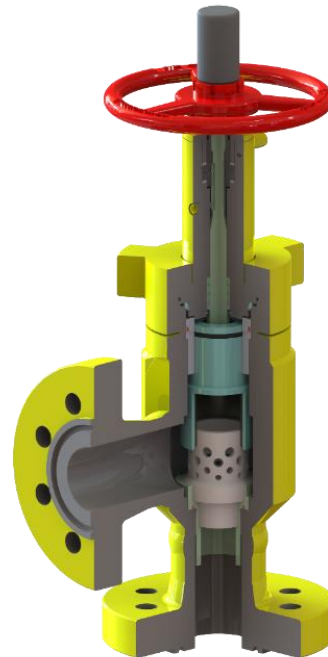
Body Design	Right Angle
Body Size	8" and 10" Nominal
Pressure Range (psi)	2000 – 5000
Temperature Class	see "Temperature Table"
Inlet / Outlet Conn.	Consult Factory
Bonnet Style	Bolted
Trim Material	Tungsten Carbide
Max Orifice Sizes	8 & 10 inch
Design CV	1094 and 1711
Flow Characteristic	Equal Percentage
Trim Style	Multiple Holes External Sleeve
Balanced / Unbalanced	Balanced
Leakage Class	Class II to V
Application	Multiphase Flow
Field Environment	Standard and Severe Service, Abrasive, CO <sub>2</sub> , H <sub>2</sub> S, High Pressure, High and Low Temperature



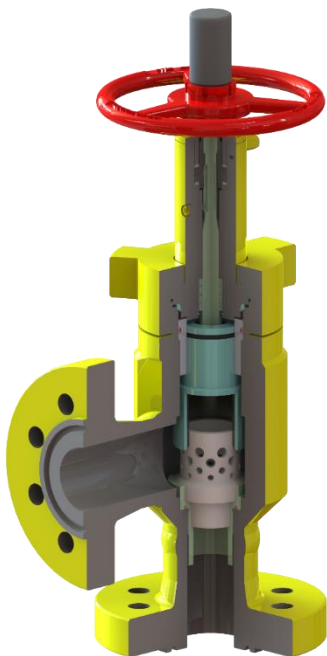


# Internal Plug Design

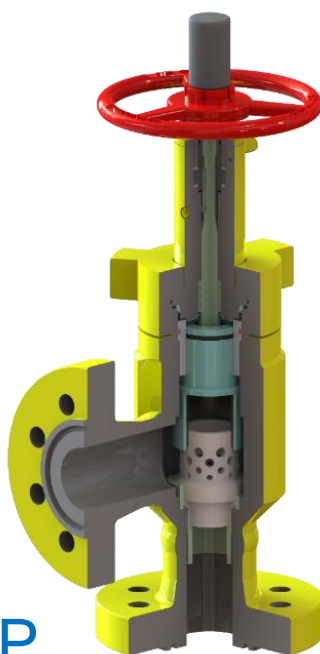
Size (Inch)	CV	Pressure Range (psi)
0.5"	4.3	2000 – 5,000
1"	22	2000 - 15,000
1.5"	43	2000 – 15,000
2"	74	2000 – 15,000
3"	154	2000 – 15,000
4"	285	2000 – 10,000
5"	470	2000 – 6,500
6"	650	2000 – 6500
8"	1094	2000 - 6500
10"	1711	2000 – 6,500



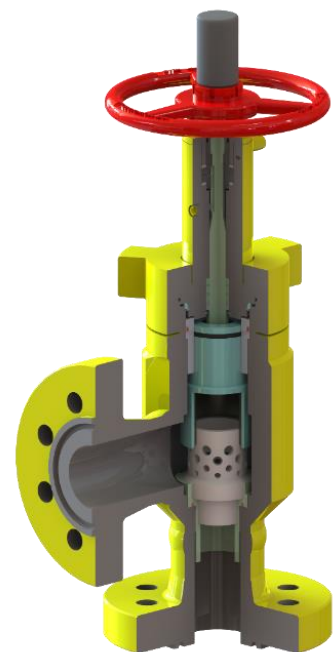
AS3IP



AS6IP



AS5IP



AS4IP

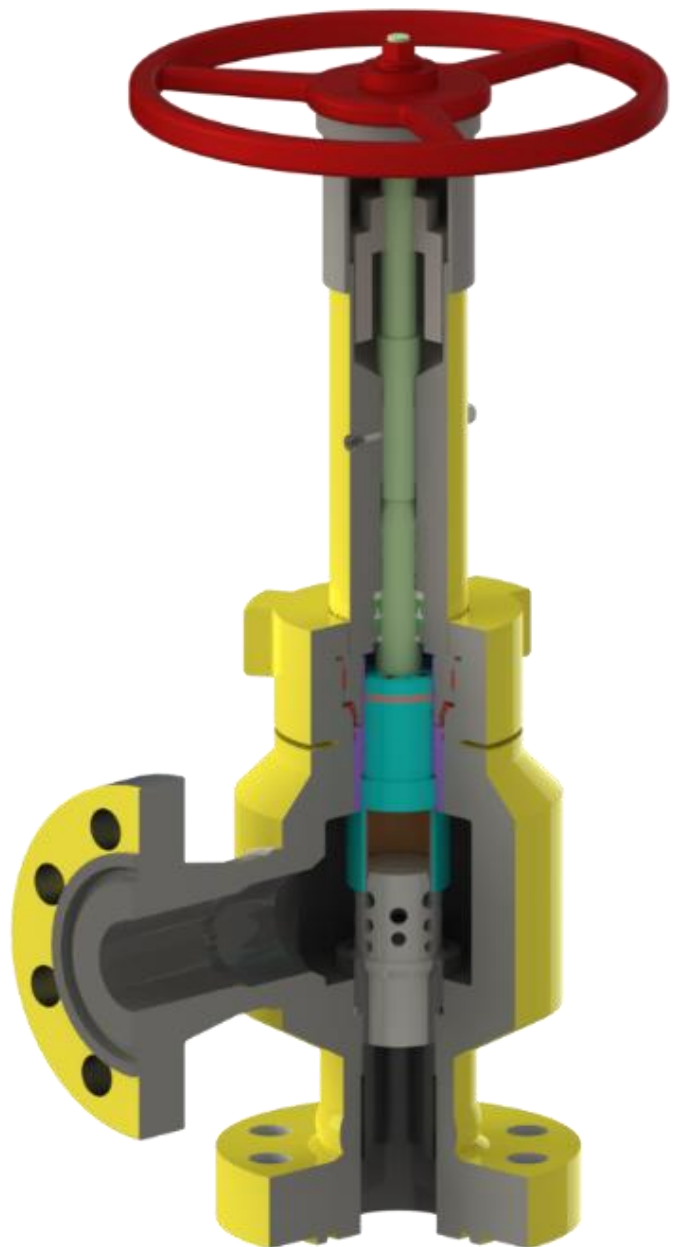
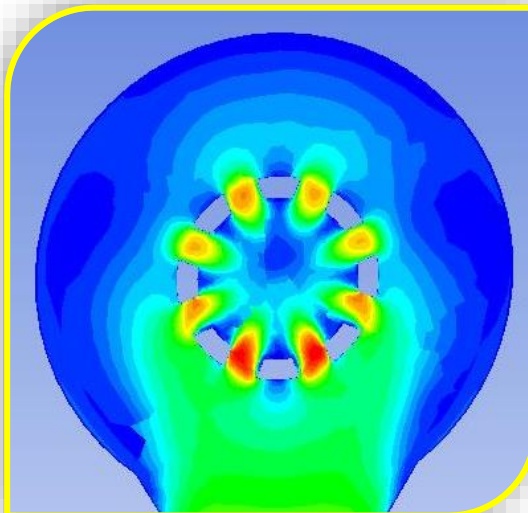
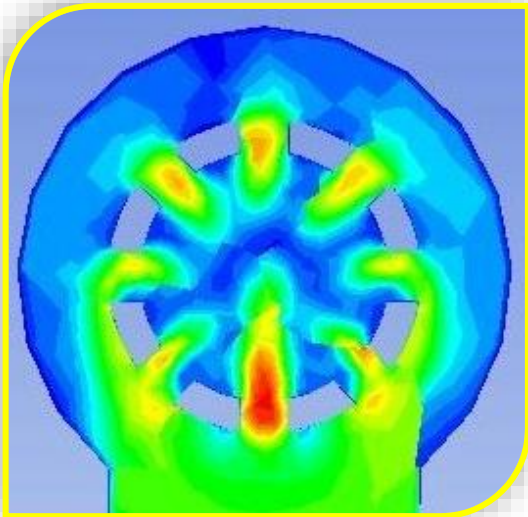


# Velocity Reduction

Velocity Reduction Design is a clever way to manage the differences in pressure in the chamber and trim areas. By increasing the chamber area size, the pressure is reduced significantly before entering the trims area. This reduction will minimize the flow velocity between the areas and thus help minimize erosion. This design has the benefits of Higher Capacity while lowering erosion.

Size	ES	IP	Pressure Range (psi)
1.5"	•		2000 – 15,000
2"	•		2000 – 15,000
3"	•	•	2000 – 15,000
4"	•	•	2000 – 10,000
5"	•	•	2000 – 6,500

ES: External Sleeve, IP: Internal Plug

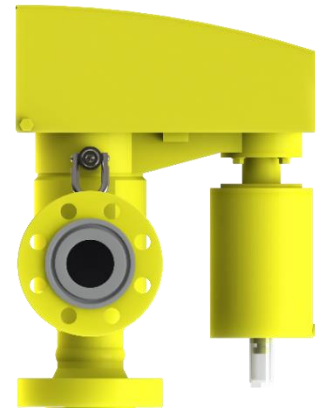
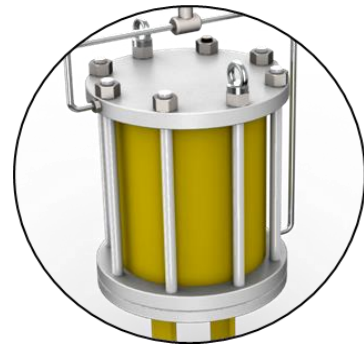
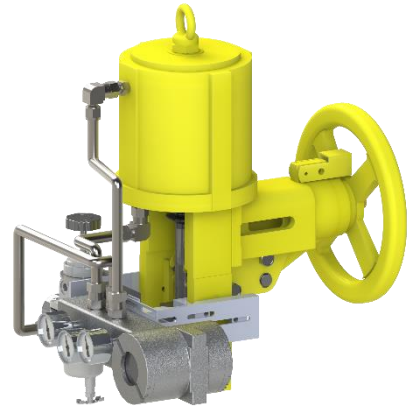




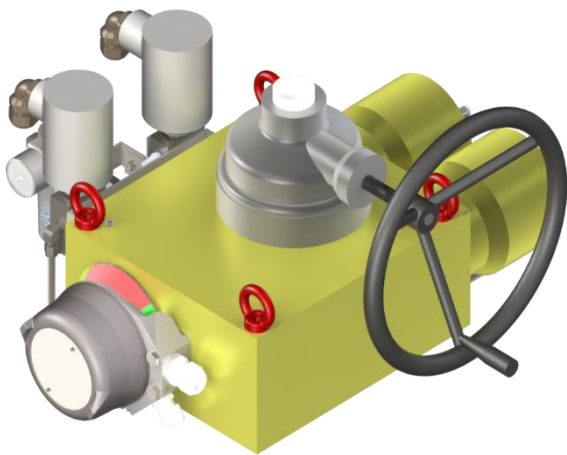




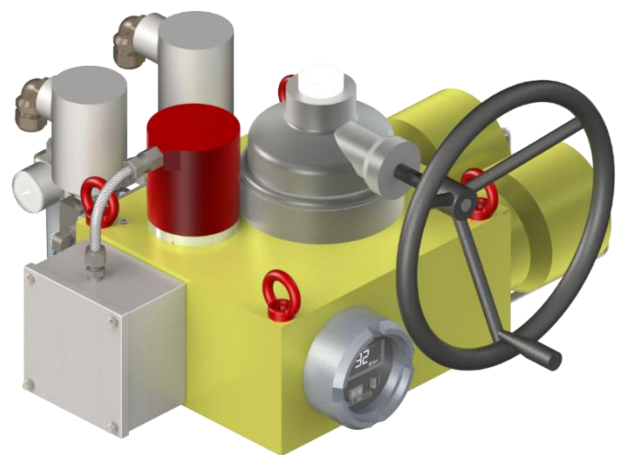
# Actuator Selections



# Stepping Actuator



Analog



Digital



## API 6A Temperature Class

-100		-50	0	50	100	150	200	250	300	350
K	-75	180								
L	-50		180							
P	-20			180						
R	Room Temperature									
S	0			150						
T	0			180						
U	0			250						
X	0			350						

Temperature Scale in Degrees Fahrenheit (F)

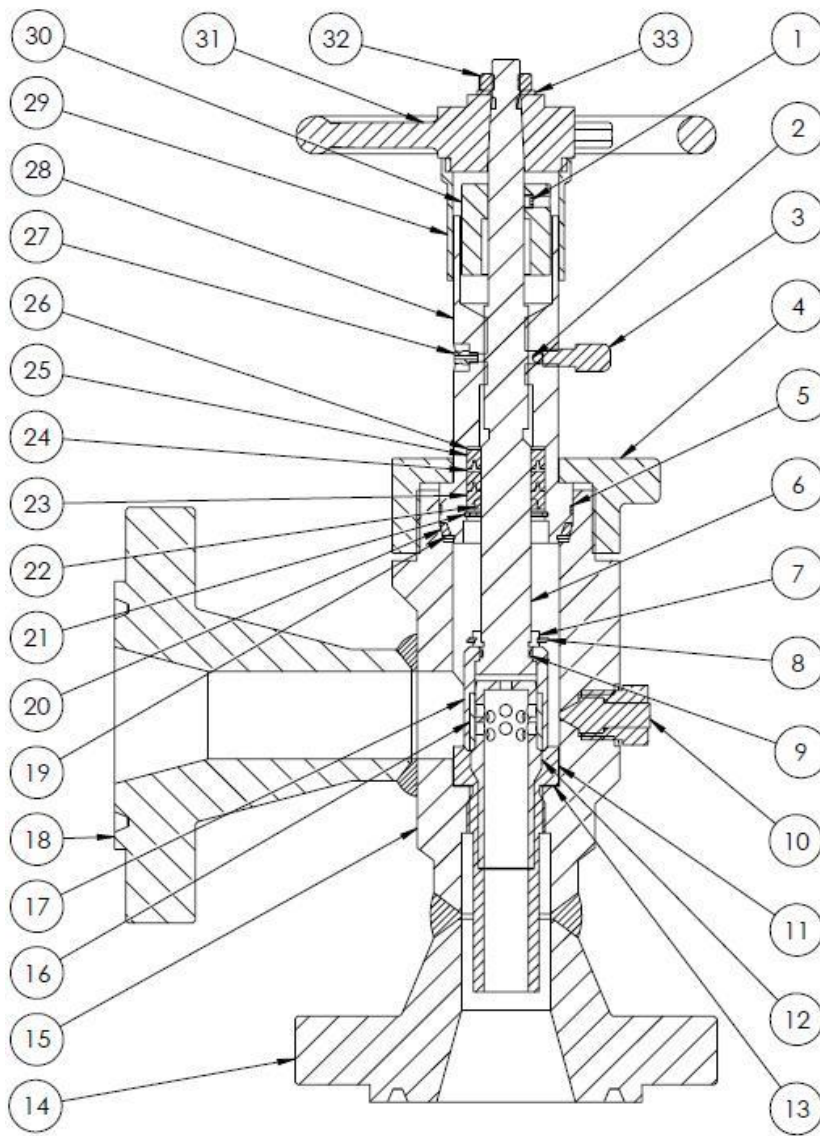
## Materials Options

Certification Level	API – 6A Material Class Designations						
	AA	BB	CC	DD	EE	FF	HH
STD / PSL-1	BB	BB	FF	EE	EE	FF	HH
PSL – 2	EE	EE	FF	EE	EE	FF	HH
PSL – 3	EE	EE	FF	EE	EE	FF	HH
STD / PSL – 1	EE	EE	FF	EE	EE	FF	HH
PSL – 2	EE	EE	FF	EE	EE	FF	HH
PSL – 3	EE	EE	FF	EE	EE	FF	HH

## Material Recommendations

API Material Class	Body & Bonnet	Choke Trim (Stem, Seat, Bean)
AA & BB General Service	Alloy Steel	Stainless Steel Or Stainless Steel & Tungsten Carbide
CC Non-Sour, CO2	Stainless Steel	Stainless Steel Or Stainless Steel & Tungsten Carbide
DD & EE Sour, Low CO2	Alloy Steel	Stainless Steel & Tungsten Carbide
FF H2S, CO2	Stainless Steel	Stainless Steel & Tungsten Carbide
HH High H2S, High CO2	Corrosion Resistant Alloy	Corrosion Resistant Alloy & Tungsten Carbide

# MTC1ES



ITEM	DESCRIPTION
1	Set Screw
2	Nylon Ball
3	Hex Socket Head Screw
4	Wing Nut
5	Seal-Bonnet
6	Stem
7	Split Sleeve
8	Retainer Ring-Split Sleeve
9	Seal-Sleeve
10	Bleed Valves
11	Seat
12	Trim
13	Seal Ring- Seat
14	Outlet Flanges
15	Body
16	Flow Ring
17	Sleeve
18	Inlet Flanges
19	Retainer Ring-Gas Ring
20	Gas Ring
21	Retainer Ring- Packing
22	Teflon Ring
23	Lower Junk Ring
24	Hat Ring
25	Seal 1-PTFE
26	Upper Junk Ring
27	Grease Fitting
28	Bonnet
29	Indicator Cover
30	Indicator
31	Hand Wheel
32	Hand Wheel Nut
33	Washer

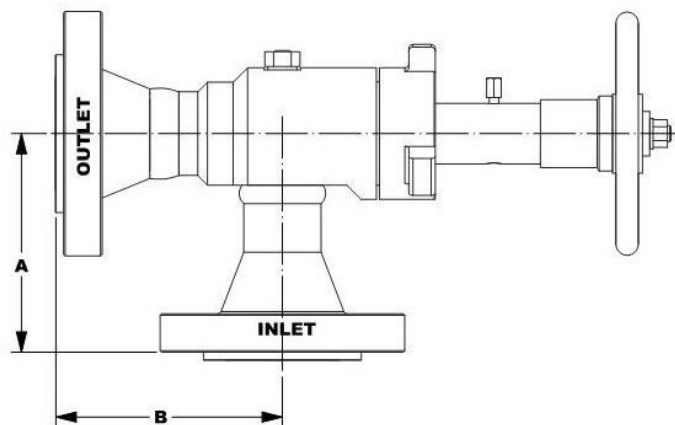
## Materials Options

Description	AA-BB	CC	DD-EE	FF	HH
Body	Alloy	Stainless Steel	Alloy	Stainless Steel	Inconel 625
Bonnet	Alloy	Stainless Steel	Alloy	Stainless Steel	Inconel 625
Wing Nut	Alloy	Alloy	Alloy	Alloy	Alloy
Packing	PTFE	PTFE	PTFE	PTFE	PTFE
Seat	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Inconel 625
Stem	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Inconel 625
Sleeve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Inconel 625
Flow Ring	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide
Trim	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide



# STANDARD END CONNECTIONS

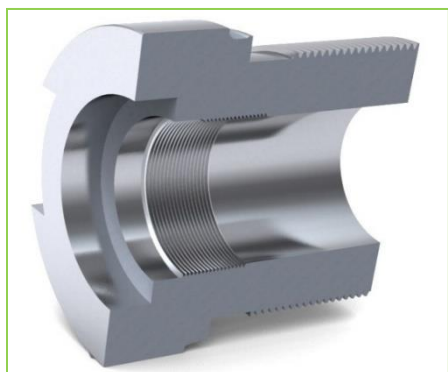
Flange Size and Type			WP (PSI)	Dimension inch (mm)		
				A	B	C
Model: MTC1ES						
1" Maximum Orifice – Nominal Connections 2”– 4”						
1-13/16”	API	RTJ	10,000	7.68 (195)	8.81 (224)	
1-13/16”	API	RTJ	15,000	8.48 (215)	9.62 (244)	
2-1/16”	API	RTJ	5,000	6.88 (175)	8.00 (203)	
2-1/16”	API	RTJ	10,000	7.68 (195)	8.81 (224)	
2-1/16”	API	RTJ	15,000	8.88 (226)	10.31 (262)	
2-9/16”	API	RTJ	5,000	6.94 (176)	8.25 (210)	
2-9/16”	API	RTJ	10,000	8.19 (208)	9.31 (236)	
2-9/16”	API	RTJ	15,000	10.50 (267)	11.75 (298)	
3-1/16”	API	RTJ	10,000	7.50 (191)	10.12 (257)	
3-1/16”	API	RTJ	15,000	10.34 (263)	11.62 (295)	
3-1/8”	API	RTJ	3,000	7.81 (198)	8.94 (227)	
3-1/8”	API	RTJ	5,000	9.69 (246)	9.56 (243)	
Model: MTC1.5ES						
1.5" Maximum Orifice – Nominal Connections 2”– 6”						
1-13/16	API	RTJ	10,000	7.68 (195)	8.81 (224)	
2-1/16”	API	RTJ	5,000	6.88 (175)	8.00 (203)	
2-1/16”	API	RTJ	10,000	7.68 (195)	8.81 (224)	
2-9/16”	API	RTJ	5,000	8.00 (203)	10.00 (254)	
2-9/16”	API	RTJ	10,000	8.00 (203)	10.00 (254)	
3-1/16”	API	RTJ	10,000	9.00 (229)	11.00 (279)	
3-1/8”	API	RTJ	3,000	8.00 (203)	10.00 (254)	
3-1/8”	API	RTJ	5,000	8.00 (203)	10.00 (254)	
4-1/16”	API	RTJ	5,000	9.50 (241)	11.50 (292)	



## STANDARD END CONNECTIONS

Flange Size and Type			WP (PSI)	Dimension inch (mm)		
				A	B	C
Model: MTC2ES						
2" Maximum Orifice – Nominal Connections 2.5”– 8”						
2-9/16”	API	RTJ	5,000	8.88 (226)	11.38 (289.1)	
2-9/16”	API	RTJ	10,000	10.38 (264)	11.75 (298.5)	
2-9/16”	API	RTJ	15,000	10.38 (264)	11.75 (298.5)	
3-1/16”	API	RTJ	10,000	10.38 (264)	11.75 (298.5)	
3-1/16”	API	RTJ	15,000	10.38 (264)	11.75 (298.5)	
3-1/8”	API	RTJ	5,000	8.88 (226)	11.38 (289.1)	
4-1/16”	API	RTJ	5,000	10.12 (257)	12.62 (320.5)	
4-1/16”	API	RTJ	10,000	9.94 (252)	11.50 (292.1)	
4-1/16”	API	RTJ	15,000	11.50 (292)	13.00 (330.2)	
Model: MTC3ES & 3IP						
3" Maximum Orifice – Nominal Connections 4”– 12”						
3-1/16	API	RTJ	10,000	9.94 (252.5)	11.50 (292.1)	
3-1/8”	API	RTJ	3,000	9.88 (251.0)	11.38 (289.1)	
3-1/8”	API	RTJ	5,000	9.88 (251.0)	11.38 (289.1)	
4-1/16”	API	RTJ	3,000	9.88 (251.0)	11.38 (289.1)	
4-1/16”	API	RTJ	5,000	9.88 (251.0)	11.38 (289.1)	
4-1/16”	API	RTJ	10,000	9.94 (252.5)	11.50 (292.1)	
5-1/8”	API	RTJ	3,000	10.88 (276.4)	14.12 (358.6)	
5-1/8”	API	RTJ	5,000	10.88 (276.4)	14.12 (358.6)	
7-1/16”	API	RTJ	5,000	12.38 (314.5)	14.12 (358.6)	

## BEAN ADAPTERS



Adapters Model/Max. Orifice	To Accept Model/Max. Orifice
MTC 3 ES	MTC 2 ES
MTC 3 IP	MTC 2 IP
MTC 3 ES	MTC 1.5 ES
MTC 3 IP	MTC 1.5 IP
MTC 3 ES	MTC 1 ES
MTC 3 IP	MTC 1 IP
MTC 2 ES	MTC 1.5 ES
MTC 2 IP	MTC 1.5 IP
MTC 2 ES	MTC 1 ES
MTC 2 IP	MTC 1 IP



A large offshore oil rig is illuminated at night, with its complex structure of pipes, platforms, and cranes glowing against the dark sky and sea. The rig is positioned on the right side of the image, with its lights reflecting on the water's surface. The sky transitions from a deep blue to a lighter hue near the horizon.

**Engineering  
Excellence  
and  
Innovation**

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